Remarks

By the foregoing Amendment, claim 8 is amended, and new claims 9-13 are presented. No new matter is added by this Amendment. Entry of the Amendment, and favorable consideration thereof, is earnestly requested.

Applicant has amended Paragraphs 0015, 0016, and 0026 of the specification to correct clerical errors.

The Examiner has objected to the Abstract. Accordingly, the Abstract has been amended.

The Examiner has rejected independent claims 1 and 8 under 35 U.S.C. §102(b) as anticipated by Chen, U.S. Patent No. 6,241,657. Applicant respectfully requests reconsideration of this rejection of independent claim 1 in view of the below remarks. Independent claim 8 has been amended, and Applicant respectfully requests reconsideration of the rejection thereof in light of the foregoing amendment and the below remarks. Additionally, Applicant has presented new independent claim 9.

Independent Claim 1

Applicant submits that Chen does not anticipate claim 1 because all of the elements in this claim are not shown in this reference. Specifically, Chen does not disclose a method for improving a diagnostic or surgical procedure involving a variable direction of view endoscope with a variable line of sight "acquiring internal endoscope

configuration data" and "displaying representations of said subsurface structure and said endoscopic line of sight in their correct relative spatial relationship" based on this internal configuration data, along with volumetric scan data and endoscope position data.

Applicant respectfully submits that Chen does not even really disclose a variable direction of view endoscope as that term is used in the present application. While the view vector shown in Chen may, of course, be "variable" in the sense that the direction can be changed by rotating the endoscope about its longitudinal axis, it does not disclose the use of an internal device for actively altering the direction of view about an axis perpendicular to the longitudinal axis of the endoscope shaft, thereby providing a second degree of freedom (illustrated schematically as numeral 26 in Fig. 1 of the present application) that allows the view vector to sweep along a plane parallel the longitudinal axis of the endoscope shaft. For example, such a configurable *internal* mechanism is often a dual-prism assembly, where a controllable first prism is rotatable about an axis perpendicular to the longitudinal axis of the endoscope shaft, and reflects the incoming light to a second, non-rotating prism for subsequent reflection along the shaft. Chen discloses no such internal mechanism for making the endoscopic line of sight completely variable by providing this second degree of freedom parallel to the shaft axis.

Moreover, not only is such an internal mechanism not disclosed, but other portions of the specification further illustrate that the Chen disclosure did not

contemplate the use of a "variable direction of view" endoscope in the sense just described (that is, an endoscope with an internal mechanism for altering the direction of the view vector independently of the orientation of the scope itself). Rather, the Chen disclosure anticipated that the endoscope and view field would remain fixed relative to each other, noting that the software objects 90A and 90B could be viewed as a single unit when being positioned within the 3-D computer models. See Col.8, lns. 14-22.

Regardless, applicant respectfully submits that the Chen disclosure does not disclose acquiring data reflecting an internal configuration of the endoscope. Though, as the Examiner notes, Chen does describe a tracking system 47 of the sort adapted to monitor the "position and orientation" of an object in space, there is no disclosure of using a tracking system to monitor an internal configuration of the scope. The monitoring described in Chen refers to the position and orientation of the scope itself (not the view vector or an internal mechanism for varying it), as evidenced by several portions of the specification, such as the reference to "tracking means that are adapted so as to determine the spatial positioning and orientation of the real-time sensor and/or the physical structure... the real-time sensor may comprise an endoscope and the physical structure may comprise an interior anatomical structure..." (Col.3, lns. 11-17). This is also evident upon examination of Figure 1 of Chen, which illustrates the tracking system 97 mounted to the endoscope 90, and at the top of Column 5, which explains:

> More particularly, endoscope tracking means 50 may comprise ***a tracking system 97 of the sort adapted to monitor the position and orientation of an object in space and to generate output signals which are representative of the position and orientation of that object***. By way of example, tracking system 97 might comprise an optical tracking system, an electromagnetic tracking system, an ultrasonic tracking system, or an articulated linkage tracking system, among other alternatives. Such tracking systems are all well known in the art and hence need not be described in further detail here. ***Tracking system 97 is attached to endoscope 90 such that the output signals generated by tracking system 97 will be representative of the spatial positioning and orientation of endoscope 90.***

Col.5, lns. 4-17. Nowhere does the specification disclose acquiring data about the internal configuration of the scope, and using that data to display representations of the subsurface structure and the endoscopic line of sight in their correct spatial relationship.

Moreover, Applicant respectfully notes that the invention is also not obvious over Chen, for several reasons. First, in order for the claimed invention to be obvious over the prior art, there must be some suggestion or motivation in the reference to make the relevant modification. *See, e.g.,* MPEP 2143.01 ("The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination."); *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art "may be capable of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so."). In Chen, there is simply no suggestion that it would be desirable to modify the described device in order to arrive at the invention of claim 1. Therefore, the invention is not obvious over this reference because, without the present application in front of them, one skilled in the art would have no motivation to

modify the Chen system in order to arrive at the claimed invention. *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991) (suggestion to combine must be found in the prior art, not the applicant's disclosure).

Additionally, Chen even teaches against such a modification, as it specifically describes (as briefly noted above) the advantage of being able to consider the scope and field of view software objects 90A, 90B as a single unit by maintaining a fixed relationship between the two. Specifically, Chen explains:

> It is important to recognize that, so long as the optical characteristics of endoscope 90 remain constant, the size and positional relationships between shaft software object 90A' and disk software object 90B' will also remain constant. As a result, it can sometimes be convenient to think of shaft software object 90A' and disk software object 90B' as behaving like a single unit, e.g., when positioning the software objects 90A' and 90B' within 3-D computer models.

Col.8, Ins. 14-22.

For each of these reasons, Applicant respectfully submits that the invention as claimed in claim 1 is not fairly taught or suggested by Chen.

Independent Claim 8

Claim 8 has been amended. The cited reference does not anticipate or render obvious claim 8, as amended, because it does not teach or suggest each and every element recited in this claim. Specifically, cited art does not disclose "acquiring internal endoscope configuration data" for the reasons discussed above.

Independent Claim 9

New independent claim 9 has been presented. The cited reference does not anticipate or render obvious claim 8, as amended, because it does not teach or suggest each and every element recited in this claim, and Applicant submits that claim 9 is even further distinguishable from the cited reference than the preceding claims. Specifically, Applicant submits that the cited reference does not disclose "acquiring configuration data of an internal view changing mechanism of the said endoscope" and "displaying representations of said subsurface structure and said endoscopic line of sight in their correct relative spatial relationship" based on this configuration data, along with volumetric scan data and endoscope position data using this configuration data. Applicant respectfully submits that the cited reference does not even disclose an internal view changing mechanism, much less the acquiring and use of data relating the configuration thereof. Applicant submits that this feature is an important aspect of the invention recited in claim 9, as explained throughout the specification, and in particular at paragraphs 0004-0006 and 0020.

It is respectfully submitted that claims 1-5 and 8-13, all of the claims remaining in the application, are in order for allowance, and early notice to that effect is respectfully requested.

Respectfully submitted,

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